



United States Department of the Interior

FISH AND WILDLIFE SERVICE
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January 3, 2017

To: Interested Parties

From: Scott Voss, Fish Biologist, Red Bluff Fish and Wildlife Office

Subject: Biweekly report (December 17, 2016 - December 31, 2016)

Please find attached preliminary daily estimates of passage, 90% confidence intervals, and fork length ranges of unmarked juvenile salmonids sampled at Red Bluff Diversion Dam for the period December 17, 2016 through December 31, 2016. Race designation was assigned using length-at-date criteria.

This report also contains graphical displays of salmonid passage dating back to 2009 for comparison.

Please note that data contained in these reports is subject to revision as this data is preliminary and undergoing QA/QC procedures.

If you have any questions, please feel free to contact me at (530) 527-3043 ext 233.

Table 1.— Preliminary estimates of passage by brood-year (BY) and run for unmarked juvenile Chinook salmon and steelhead trout captured by rotary-screw traps at Red Bluff Diversion Dam (RK391), Sacramento River, CA, for the dates listed below. Results include estimated passage, peak river discharge volume, water temperature, turbidity, and fork length (mm) range in parentheses. A dash (-) indicates that sampling was not conducted on that date.

Date	Discharge volume (cfs) ¹	Water temperature (°C)	Water turbidity (NTU)	Estimated passage				
				BY16 Winter	BY16 Spring	BY16 Fall	BY16 Late-Fall	BY16 RBT
12/17/2016	58,000	8.3	—	—	—	—	—	—
12/18/2016	17,700	7.4	25.4	—	—	—	—	—
12/19/2016	12,900	7.4	18.7	1,830 (56 – 95)	629 (38 – 41)	14,639 (29 – 37)	57 (106)	114 (77 – 83)
12/20/2016	11,100	7.9	12.3	1,103 (53 – 101)	214 (39 – 50)	8,778 (30 – 38)	118 (120 – 132)	0 (—)
12/21/2016	10,200	8.9	7.5	330 (57 – 81)	122 (39 – 50)	4,308 (31 – 38)	111 (110 – 123)	0 (—)
12/22/2016	13,700	9.4	9.3	1,638 (62 – 90)	99 (39 – 39)	17,719 (31 – 38)	629 (105 – 150)	0 (—)
12/23/2016	13,500	9.5	7.8	1,157 (65 – 74)	0 (—)	28,431 (31 – 38)	0 (—)	0 (—)
12/24/2016	27,200	8.6	—	—	—	—	—	—
12/25/2016	19,600	8.2	—	—	—	—	—	—
12/26/2016	15,000	7.8	—	—	—	—	—	—
12/27/2016	14,000	8.3	6.4	701 (54 – 79)	86 (40 – 42)	31,421 (29 – 39)	43 (140)	0 (—)
12/28/2016	13,400	8.6	6.1	728 (64 – 106)	0 (—)	37,421 (30 – 39)	290 (114 – 123)	0 (—)
12/29/2016	13,100	8.7	6.2	483 (61 – 80)	115 (51 – 51)	57,392 (31 – 40)	147 (116 – 116)	0 (—)
12/30/2016	12,900	8.7	6	307 (70 – 91)	0 (—)	55,382 (29 – 39)	180 (116 – 117)	0 (—)
12/31/2016	12,600	8.7	5.6	355 (57 – 87)	0 (—)	51,765 (30 – 40)	119 (116 – 116)	0 (—)
Biweekly Total ²				12,600	1,811	476,835	2,527	160
<i>Biweekly Lower 90% Confidence Interval</i>				5,617	325	264,463	289	-106
<i>Biweekly Upper 90% Confidence Interval</i>				19,582	3,298	689,206	4,766	425
Brood Year Total				521,186	49,909	515,843	68,931	28,096
<i>Brood year Lower 90% Confidence Interval</i>				388,983	30,011	277,157	36,346	9,474
<i>Brood year Upper 90% Confidence Interval</i>				653,390	69,806	754,529	101,516	46,719

¹ Peak daily discharge values do not account for diversions at RBDD and only represent peak flows registered at the Bend Bridge Gauging station (<http://cdec2.water.ca.gov/cgi-progs/queryFx?bnd>).

² Biweekly totals may be greater than the sum of the daily estimates presented in this table if sampling was not conducted on each day of the biweekly period. A dash (-) denotes those dates. To estimate daily passage for days that were not sampled, we impute missed sample days with the weekly mean value of days sampled within the week.

Juvenile Winter Chinook Salmon Estimated Passage

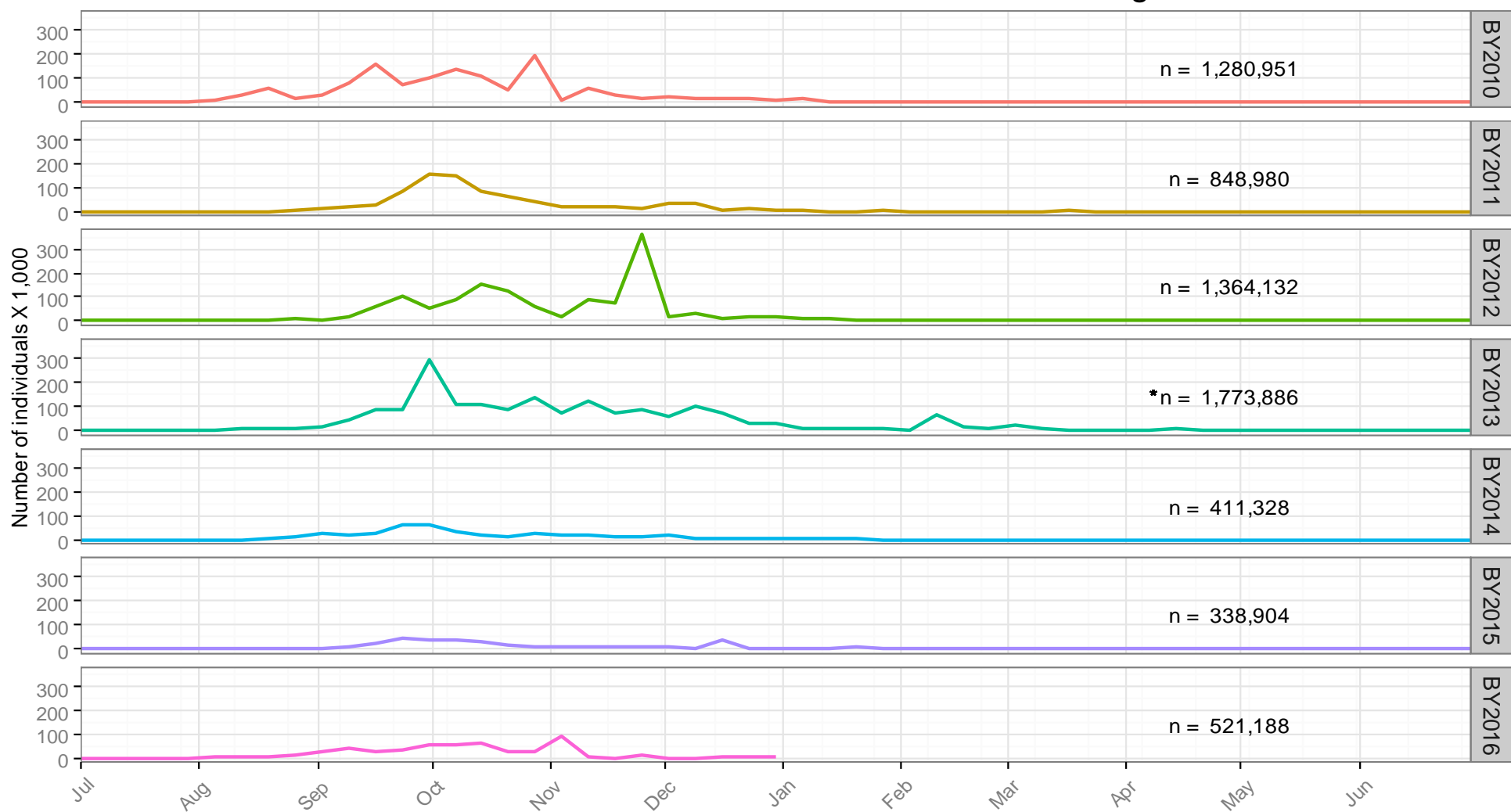


Figure 1. Weekly estimated passage of unmarked juvenile winter Chinook salmon at Red Bluff Diversion Dam (RK391) by brood-year (BY). Fish were sampled using rotary-screw traps for the period July 1, 2010 to present.

*Winter run passage value interpolated using a monthly mean for the period October 1, 2013 - October 17, 2013 due to government shutdown.

Juvenile Spring Chinook Salmon Estimated Passage

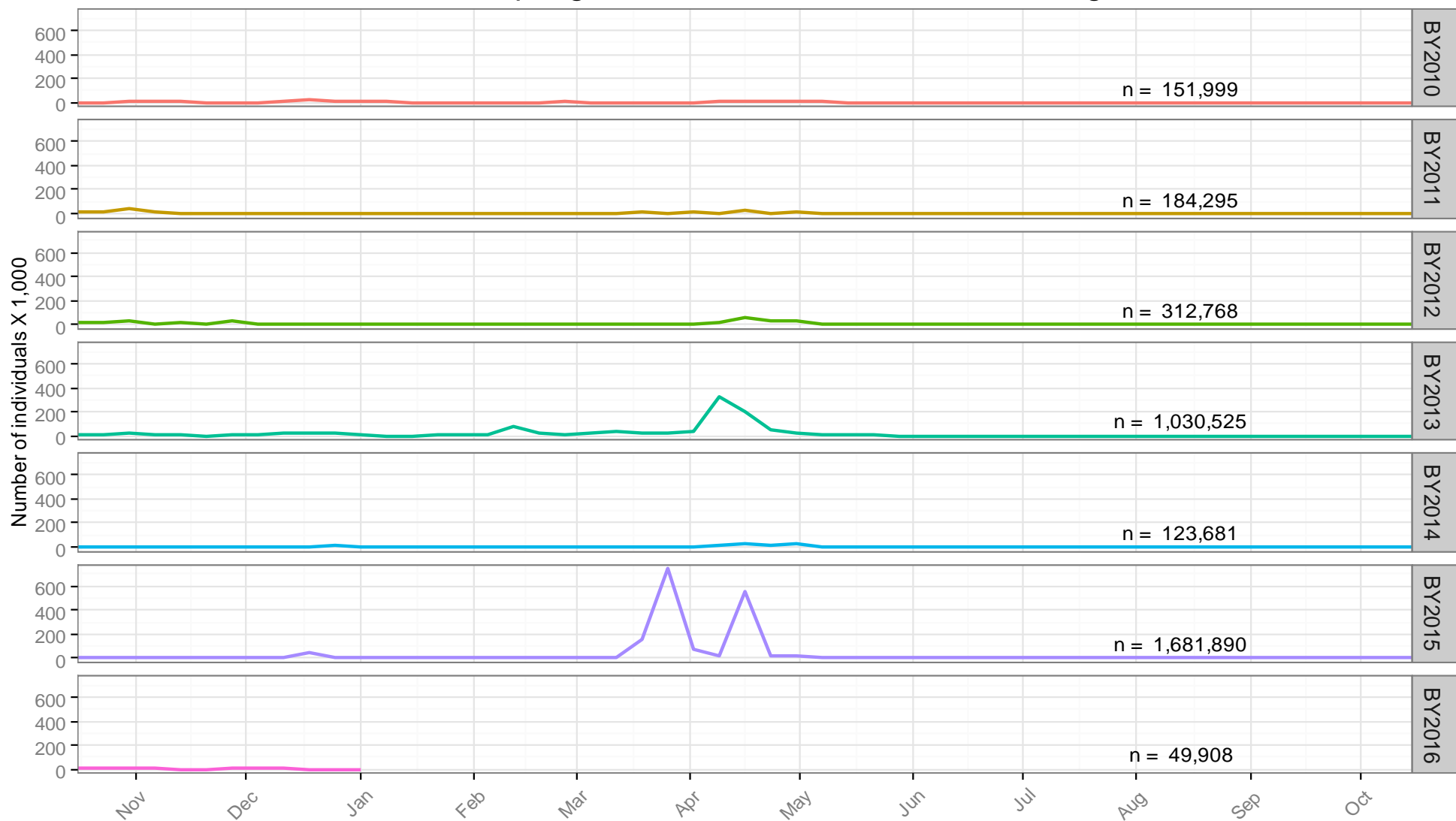


Figure 2. Weekly estimated passage of unmarked juvenile spring Chinook salmon at Red Bluff Diversion Dam (RK391) by brood-year (BY). Fish were sampled using rotary-screw traps for the period October 16, 2010 to present.

Juvenile *Onchorhynchus mykiss* Estimated Passage

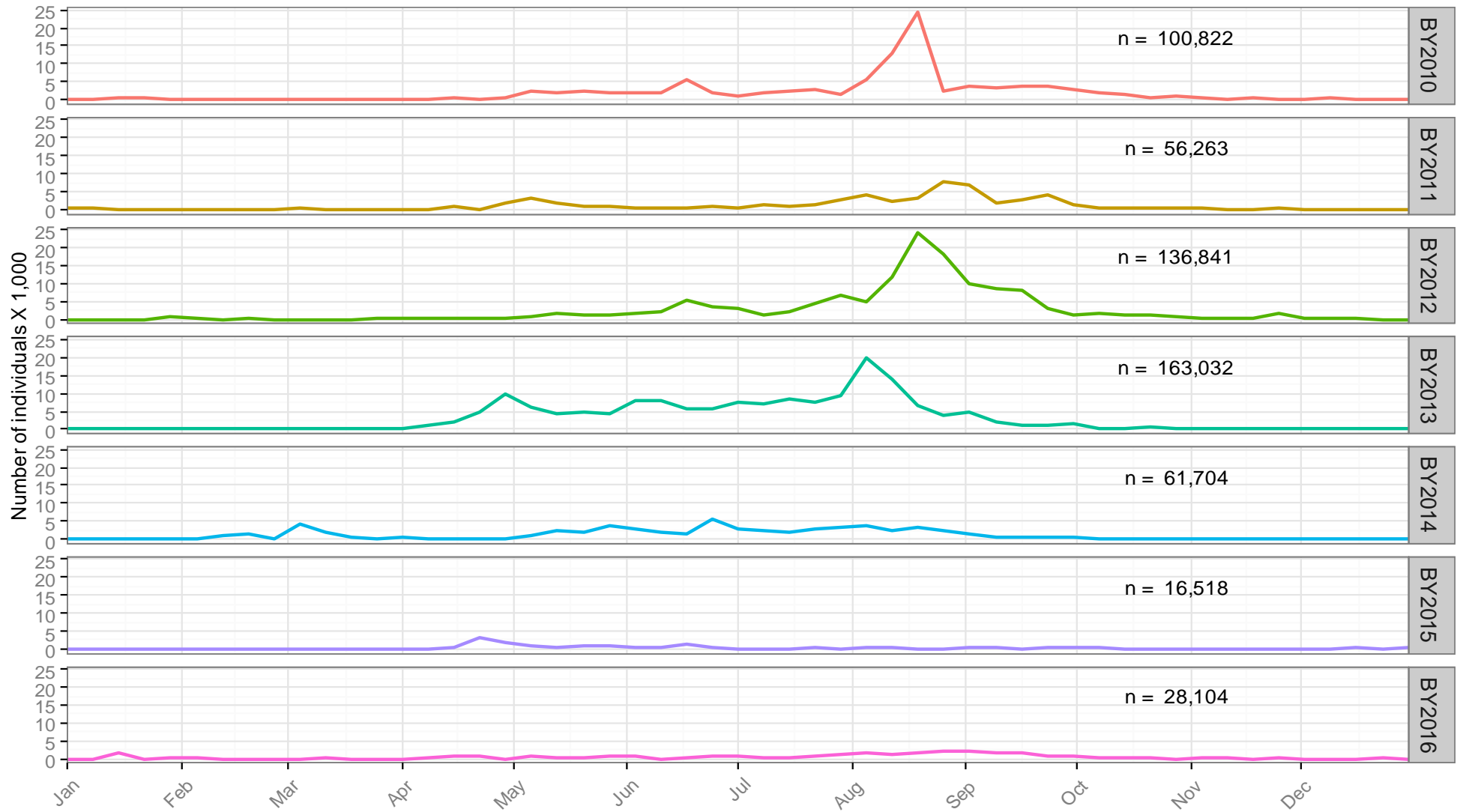


Figure 3. Weekly estimated passage of unmarked juvenile Rainbow/Steelhead trout at Red Bluff Diversion Dam (RK391) by brood-year (BY). Fish were sampled using rotary-screw traps for the period January 1, 2010 to present.

Juvenile Fall Chinook Salmon Estimated Passage

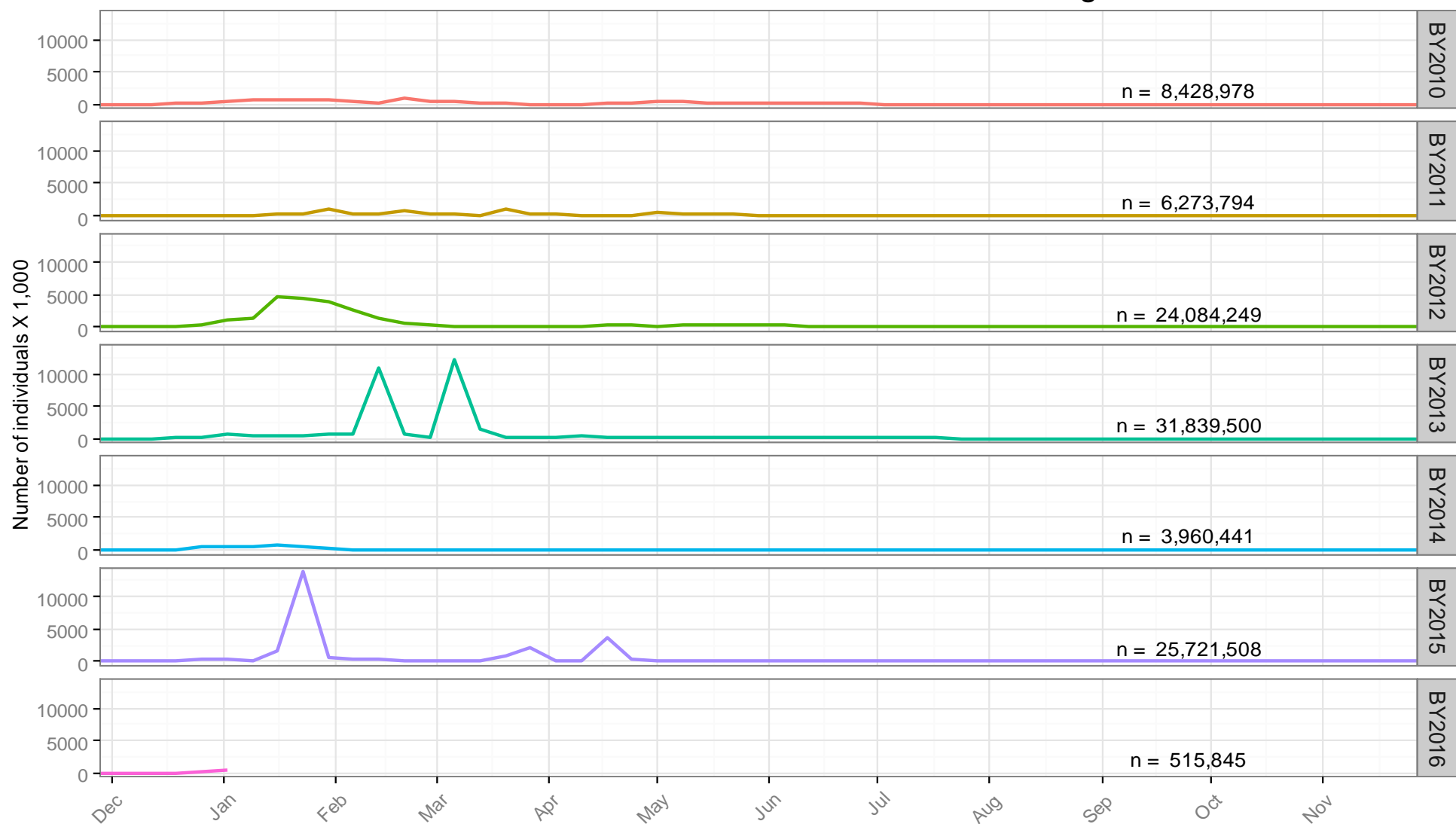


Figure 4. Weekly estimated passage of unmarked juvenile fall Chinook salmon at Red Bluff Diversion Dam (RK391) by brood-year (BY). Fish were sampled using rotary-screw traps for the period December 1, 2010 to present .

Juvenile Late Fall Chinook Salmon Estimated Passage

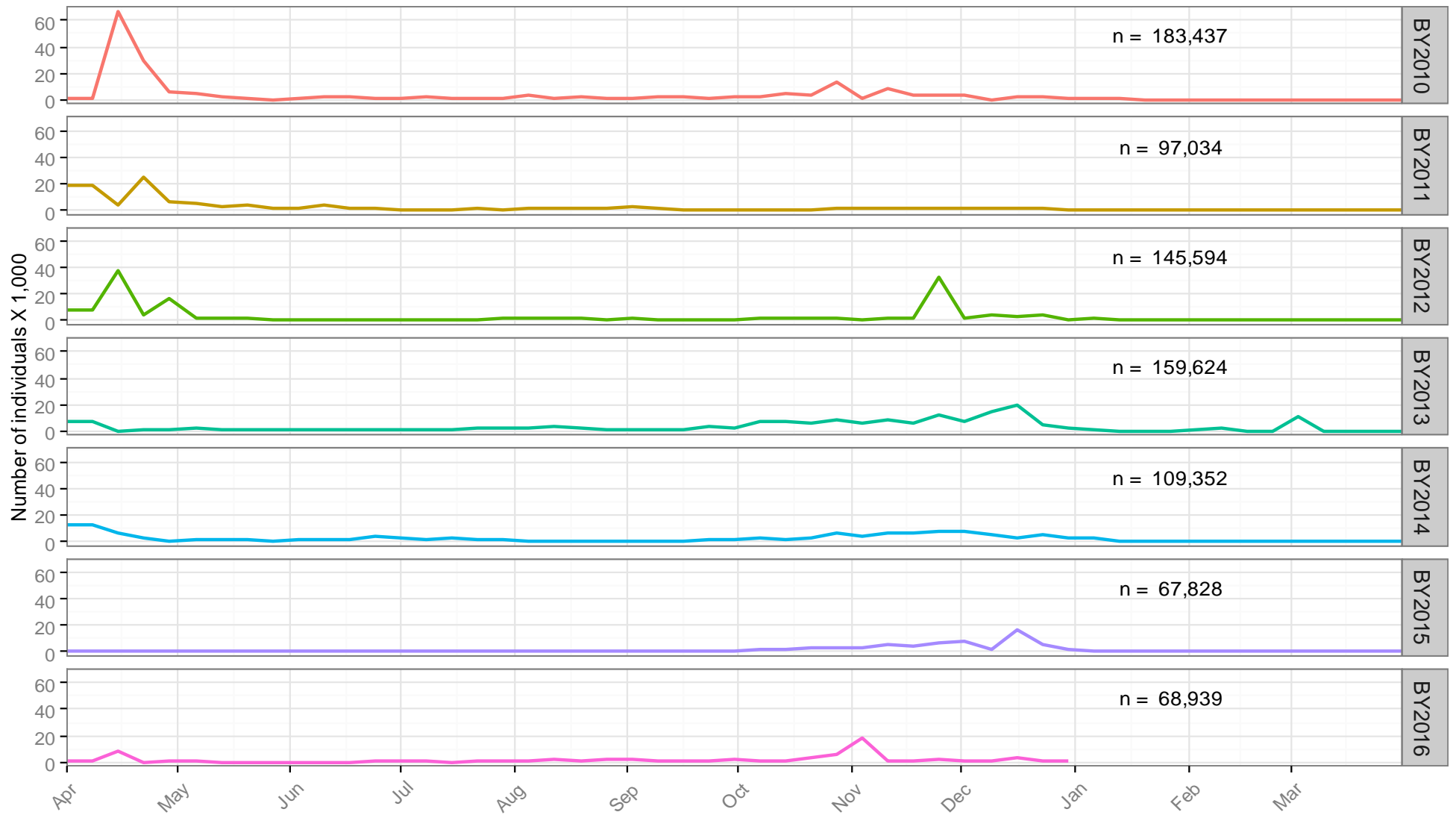


Figure 5. Weekly estimated passage of unmarked juvenile late fall Chinook salmon at Red Bluff Diversion Dam (RK391) by brood-year (BY). Fish were sampled using rotary-screw traps for the period April 1, 2010 to present .

Weekly Estimated Chinook Passage at Red Bluff Diversion Dam - All Runs Combined

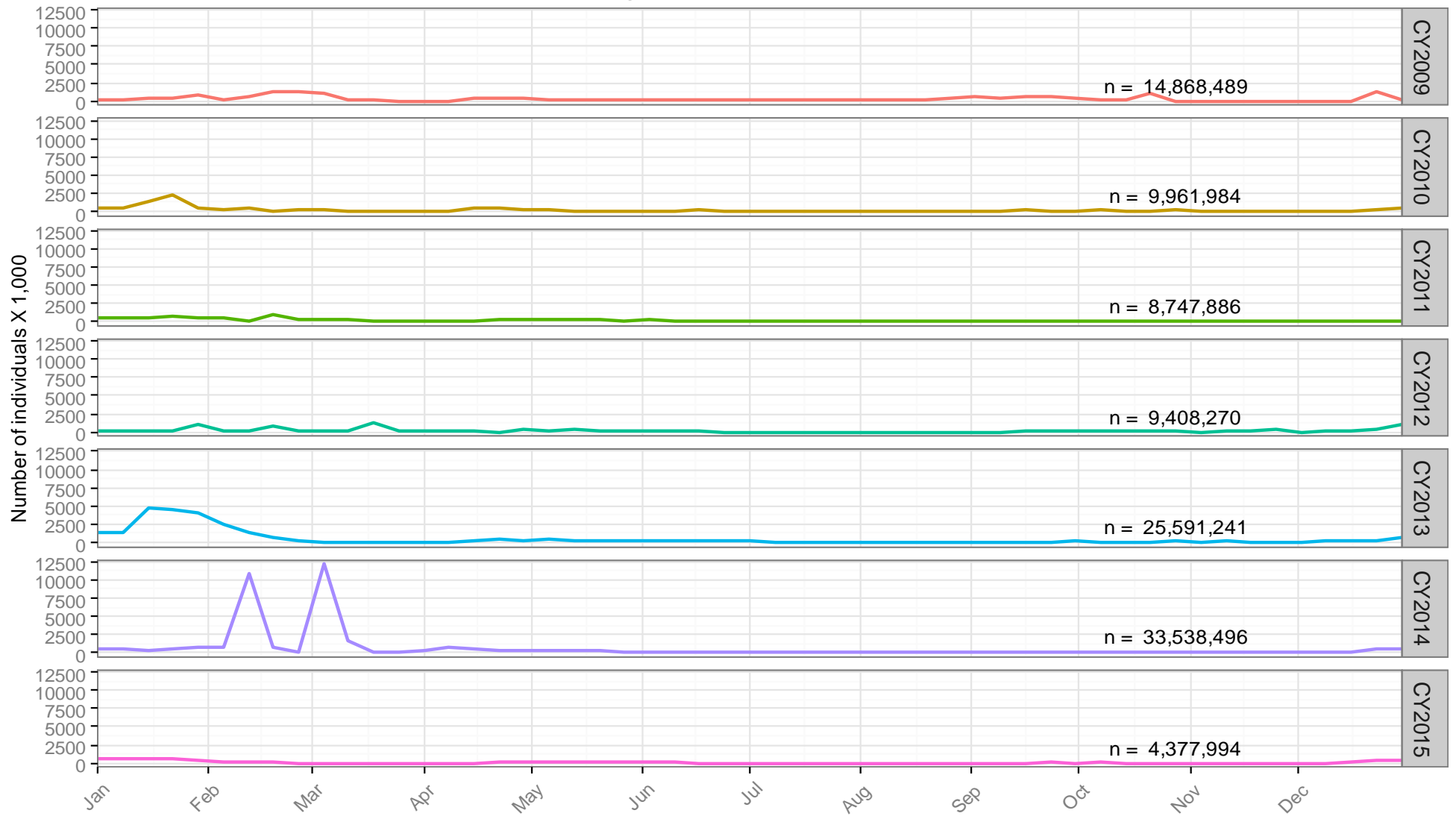


Figure 6. Weekly estimated passage of unmarked juvenile Chinook salmon at Red Bluff Diversion Dam (RK391) by calendar year. Fish were sampled using rotary-screw traps for the period January 1, 2009 to December 31, 2015